AMENDMENTS TO THE CLAIMS

1. (Currently amended) Simulation process of a radiofrequency scenario starting from generation of serial messages including useful information (SIM_D, BT_SIM, SIM_DEL) for obtaining a phase-modulated radiofrequency test signal comprehensive of the most relevant channel impairments, including co-channel interference, which is sent to the input of a receiver under test (DUT) whose output is monitored, the process comprising ~~characterized in that includes~~ the following ~~further~~ phases piloted by the message contents:

- execution of N×P digital modulation of a base band carrier, for obtaining P groups (carrier 1, …, carrier M) of N base band isofrequential digital replicas of said phase-modulated carrier, ~~being~~ P being chosen from 1 to the maximum number M of modulated carriers fitting an ~~the~~ assigned band of the receiver under test (DUT), and N being the number of independent inputs of said receiver;
- digital multiplication, for every P groups of N replicas, of each base band replica by a respective complex constant (SIM_BEAM_W1, SIM_BEAM_W2, ..., SIM_BEAM_WN) assigned to the group, ~~being~~ the numerical order of the replicas and the phases of the multiplicative constants both increasing gradually in ~~the~~ successive products, for beamforming each of the P groups of N replicas according to a ~~an its own~~ desired arrival direction of the P groups for simulation ~~to simulate~~;
- adjustment of the power level of each of the P groups of N replicas;

- digital multiplication of each beamformed group of N replicas by a relevant digital intermediate frequency carrier (SIM_NCO) which carries out frequency conversion of the group at a respective intermediate frequency, so establishing for each intermediate frequency converted beamformed group ($C1_1$, $C1_2$, ..., $C1_N$; .... ; CM_1, CM_2, ..., CM_N) a ~~the~~ relative position inside the broad band of the receiver under test;
- summation of all the P intermediate frequency converted replicas having the same order in each beamformed group, for obtaining N broad band intermediate frequency replicas (IF1, IF2, ..., IFN);
- analogue conversion of the N broad band intermediate frequency replicas (IF1, IF2, ..., IFN) and filtering broad band the analogue replicas for reconstruction;
- radiofrequency conversion, amplification and filtering of the reconstructed analogue replicas ~~of the reconstructed analogue replicas, amplifying and filtering they~~ for obtaining N broad band radiofrequency replicas (RF1, RF2, ..., RFN) constituting a single test signal suitable for testing the operation of a directional receiver, preferably one included in a base station of a radiomobile system designed for cooperating with a N-elements directive array;
- application of the N broad band radiofrequency replicas (RF1, RF2, ..., RFN) directly to N radiofrequency inputs (in1, in2, ..., inN) of the receiver under test (DUT), each radiofrequency input bypassing an associated ~~the~~ antenna.

2. (Currently amended) Simulation process of radiofrequency scenario

according to claim 1, wherein ~~characterized~~ in that the content of said serial messages (SIM_D, SIM_PN, SIM_DEL, SIM_BEAM_W1, …, SIM_BEAM_WN, SIM_NCO, OL) is read from general tables (TAB.1, TAB.2, ..., TABK) of parameters and options defining a scenario concerning at least one useful transmission signal and one or more isofrequential interferent signals, having simulated arrival directions generally different from those of said relevant useful signals.

3. (Currently amended) Simulation process according to claim 2, wherein ~~characterized in that~~ said general tables (TAB.1, TAB.2, ..., TABK) constitute a sequence of K tables cyclically read.

4. (Currently amended) Simulation process according to claim 3, wherein ~~characterized in that its~~ operative phases of the simulation process form a sequence repeated at time intervals of the same duration, using time by time said messages obtained converting a new general table of said cyclic sequence, thus giving dynamic and recurrent characteristics to said simulated scenario.

5. (Currently amended) Simulation process according to claim 4, wherein ~~characterized in that~~ said equal duration of the time intervals is such that the variation speed of the contents of said messages is similar to the one that can be detected in the corresponding said parameters of a real scenario.

6. (Currently amended) Simulation process according to claim 5, wherein ~~characterized in that~~ said duration is equal to, or lower than 4.61 ms.

7. (Currently amended) Simulation process according to claim 4, wherein ~~characterized in that~~ said general tables (TAB.1, TAB.2, ...,

TABK) are updated during the testing time, and corresponding updated messages are generated in synchronous mode compared to said sequential time intervals.

8. (Currently amended) Simulation process according to claim 4, further comprising ~~characterized in that it includes~~ an additional acquisition phase of the results of said testing, in asynchronous mode compared to said sequential time intervals.

9. (Currently amended) Simulation process according to claim 2, wherein ~~characterized in that~~ the selection of some of said options of said general tables (TAB.1, TAB.2, ..., TABK) involves the compilation of relevant sub-tables containing additional parameters to select for the specified option.

10. (Currently amended) Simulation process according to claim 4, wherein ~~characterized in that~~ said carriers are time division multiplexed, and each of said sequential time intervals of the same duration corresponds to a frame time.

11. (Currently amended) Simulation process according to claim 2, wherein ~~characterized in that~~ said general tables (TAB.1, TAB.2, ..., TABK) ~~include~~ also include parameters that take into account the presence of noise, ~~the~~ a doppler effect due to the speed of ~~the~~ mobiles, and the quick and sudden fading of a received ~~the~~ electromagnetic field ~~received~~, caused by multiple paths destructive interference or by masking by obstacles encountered by mobiles in movement.

12. (Currently amended) Testing system of a radiofrequency receiver, including a control processor (CNTR_PC) for generating serial messages directed to orthogonal modulation and frequency conversion devices

controlled by the content of said messages for generating a phase-modulated radiofrequency test signal comprehensive of the most relevant channel impairments, including co-channel interference which is sent to the input of a receiver under test (DUT) whose output is monitored, the testing system comprising ~~characterized in that it further includes~~:

- N×P digital modulators (GMSK1, GMSK2, ..., GMSKN) of a self-generated base band carrier, for obtaining P groups (carrier 1, …, carrier M) of N base band isofrequential digital replicas of said phase-modulated carrier, ~~being~~ P being chosen from 1 to the maximum number M of modulated carriers fitting an ~~the~~ assigned band of the receiver under test (DUT), and N being the number of independent inputs of said receiver;
- N×P first digital multipliers (M1, M2, ..., MN; …) arranged for multiplying, for every P groups of N replicas, each base band replica by a respective complex constant (SIM_BEAM_W1, SIM_BEAM_W2, ..., SIM_BEAM_WN) assigned to the group, ~~being~~ the numerical order of the replicas and the phases of the multiplicative constants both increasing gradually in ~~the~~ successive products, for beamforming each of the P group of N replicas according to ~~an its own~~ a desired arrival direction of the P groups for simulation ~~to simulate~~;
- means for adjusting the power level of each of the P groups of N replicas;
- N×P second digital multipliers (MM1, MM2, ..., MMN; ….) for multiplying each beamformed group of N replicas by a relevant digital intermediate frequency carrier (SIM_NCO, ….) which

carries out frequency conversion of the group at a respective intermediate frequency, so establishing for each intermediate frequency converted beamformed group ($C1_1$, $C1_2$, ..., $C1_N$; .... ; CM_1, CM_2, ..., CM_N) a ~~the~~ relative position inside the broad band of the receiver under test;

- N digital adding means (1, 2, ..., N) for summing up all the P intermediate frequency converted replicas having the same order in each beamformed group, for obtaining N broad band intermediate frequency replicas (IF1, IF2, ..., IFN);
- N digital/analogue conversion means (D/A) of said N broad band intermediate frequency replicas (IF1, IF2, ..., IFN) followed by broad band filtering means for reconstructing the analogue replicas;
- N radiofrequency mixers (MX1, MX2, ..., MXN) of said N broad band reconstructed analogue replicas (IF1, IF2, ..., IFN) for obtaining N broad band radiofrequency replicas (RF1, RF2, ..., RFN);
- N radiofrequency amplifiers (PA1, PA2, ..., PAN) for amplifying said radiofrequency replicas (RF1, RF2, ..., RFN) and orderly sending said amplified radiofrequency replicas ~~sent them~~ to N radiofrequency outputs (out1, out,2, ..., outN) of the testing system, where the radiofrequency replicas constitute a single test signal suitable for testing the operation of a directional receiver, preferably one included in a base station of a radiomobile system designed for cooperating with a N-elements directive array;

- a whole of N coaxial cables, or equivalent means, connecting said N radiofrequency outputs to a same number of inputs (in1, in2, ..., inN) of a said receiver (DUT), without antenna.

13. (Currently amended) Testing system according to claim 12, wherein ~~characterized in that~~ the intermediate frequency converted beamformed groups (Cl_1, Cl_2, ..., Cl_N; .... ; CM_1, CM_2, ..., CM_N), each of N replicas, are generated by means of P identical digital modules (TX_PROC1, …, TX_PROCM), each including a dedicated processor interface (INTF_PC) communicating with N digital modulators (GMSK1, GMSK2, ..., GMSKN), N first digital multipliers (M1, M2, ..., MN), and N second digital multipliers (MM1, MM2, ..., MMN); the whole digital modules being connected to N buses (BS1, BS2, ..., BSN) for transferring the N broad band intermediate frequency replicas (IF1, IF2, ..., IFN) towards as many digital to analogue converters (D/A), through a binary tree of N two-inputs digital adders (1, 2, ..., N).

14. (Currently amended) Testing system according to claim 12, wherein ~~characterized in that~~ said control processor (CNTR_PC) transfers to said interface means (INTF_PC, LO_CORP) said control messages (SIM_D, SIM_BEAM_W1, SIM_BEAM_W2, ..., SIM_BEAM_WN SIM_NCO, OL) at sequential time intervals of identical duration.

15. (Currently amended) Testing system according to claim 14, wherein ~~characterized in that~~ said identical duration of the sequential time intervals is such that the variation speed of the contents of said messages is similar to that which can be detected in corresponding parameters of a real scenario.

16. (Currently amended) Testing system according to claim 12, wherein

~~characterized in that~~ said messages are obtained from the conversion of general tables (TAB.1, TAB.2, ..., TABK) of parameters and options defining a simulated scenario, stored into said control processor (CNTR_PC).

17. (Currently amended) Testing system according to claim 16, wherein ~~characterized in that~~ said general tables (TAB.1, TAB.2, ..., TABK) are organized in a sequence of K tables cyclically repeated.

18. (Currently amended) Testing system according to claim 14, wherein ~~characterized in that~~ said duration is equal to or lower than 4.61 ms.

19. (Currently amended) Testing system according to claim 16, wherein ~~characterized in that~~ said general tables (TAB.1, TAB.2, ..., TABK) are filled in before the testing and updated during the testing, and the corresponding updated messages are generated in synchronous mode compared to said sequential time intervals.

20. (Currently amended) Testing system according to claim 12, wherein ~~characterized in that~~ said carriers are time division multiplexed and said duration corresponds to a frame time.

21. (Currently amended) Testing system according to claim 16, wherein ~~characterized in that~~ said general tables (TAB.1, TAB.2, ..., TABK) include also parameters to simulate the presence of noise, ~~the~~ a doppler effect due to the speed of ~~the~~ mobiles, and the quick and sudden fadings of ~~the~~ a received electromagnetic field ~~received~~, caused by destructive interference by multiple paths or by masking by obstacles encountered by the mobiles in movement.

22. (New) A method for generating a test signal to be applied to a radiofrequency receiver having N intelligent antennas, comprising the steps of:

obtaining N digital signals, each digital signal replicating a digital multicarrier signal having phase-modulated carriers;

reconstructing N broadband signals by performing digital-to-analog conversion and broadband filtering on the N digital signals;

obtaining N broadband radiofrequency signals by performing radiofrequency conversion on the reconstructed N broadband signals;

amplifying the N broadband radiofrequency signals; and

applying the amplified N broadband to N inputs of the receiver, the N inputs bypassing the N intelligent antennas of the receiver.

23. (New) The method according to claim 22, wherein the obtaining step obtains the N digital signals based on parameters defining a scenario concerning at least one useful transmission signal and one or more isofrequential interferent signals, the isofrequential interferent signals having simulated arrival directions generally different from those of said relevant useful signals.

24. (New) The method according to claim 23, wherein the steps are repeated at time intervals of a same duration, using new parameters to obtain the N digital signals, thus giving dynamic and recurrent characteristics to said simulated scenario.

25. (New) The method according to claim 24, wherein the same duration is substantially equal to, or lower than, 4.61 ms.

26. (New) The method according to claim 23, wherein the parameters take into account the presence of noise, a doppler effect due to the speed of transmitting mobiles, and quick and sudden fading of a received electromagnetic field, caused by multiple paths destructive interference or by masking by obstacles encountered by mobiles in movement.

27. (New) A testing system for a radiofrequency receiver having N intelligent antennas, comprising:

means for obtaining N digital signals, each digital signal replicating a digital multicarrier signal having phase-modulated carriers;

means for performing digital-to-analog conversion on the group of N digital signals;

means for broadband filtering the converted N analog signals to obtain N broadband signals;

means for performing radiofrequency conversion on the N broadband signals to obtain N broadband radiofrequency signals;

means for amplifying the N broadband radiofrequency signals; and

means for transmitting the amplified N broadband radiofrequency signals to N inputs of a radiofrequency receiver, the N inputs bypassing the N intelligent antennas.

28. (New) The testing system according to claim 28, further comprising:

means for obtaining said N digital signals from control messages at sequential intervals of identical duration, said control messages being used to generate a phase-modulated radiofrequency test signal.

29. (New) The testing system according to claim 29, further comprising:

means for storing tables of parameters defining a simulated scenario; and

means for converting said tables of parameters to obtain said control messages.

30. (New) The testing system according to claim 29, wherein the stored tables include,

parameters simulating at least one of: presence of noise, a doppler effect due to speed of mobiles, and fading of a received electromagnetic field.